

Solid Earth Discuss., referee comment RC2
<https://doi.org/10.5194/se-2022-8-RC2>, 2022
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Comment on se-2022-8

Pinto Luisa (Referee)

Referee comment on "Analogue modelling of basin inversion: a review and future perspectives" by Frank Zwaan et al., Solid Earth Discuss.,
<https://doi.org/10.5194/se-2022-8-RC2>, 2022

GENERAL COMMENTS:

- I enjoyed reading the manuscript very much and especially reviewing the figures.
- The figures are the heart of the review. They are easy to follow and show a very good comparison to previous studies. There is a careful design of the figures and a careful explanation in the 'figure captions'.
- This work will be a great contribution to all modelers. It is an update on analysis in general and for those of us who work on basin inversion analysis. Undoubtedly, this work will be a guide and excellent analog modeling benchmarking for the field of basin tectonic inversion.
- The number of works reviewed is impressive; I counted 285 publications in the reference list. Amazing. Pay attention to cross-checking citations and references. See specific comments below. Being this manuscript is a review, it is even more important that there are no doubts about the reference to the reviewed works so that the reader can find them without problems in case they are interested in delving into one of the topics.
- In addition, a careful review of the published models is noted, with care in the experimental conditions, which is shown in the explanations and analysis of the models within the text.
- This is reflected in a very well-written document, generally clear, step by step, with

adequate detail.

- In the last item of the 'review' 'perspectives for future modeling studies of basin inversion', the authors take a good look at the analog projection in the field of tectonic inversion of basins. The authors give good recommendations to the modelers to homogenize the experimental conditions in the future, to facilitate comparison and analysis of the results. It seems to be a very good closing of the review.

- All in all, excellent work.

- Below I send specific comments and technical corrections on the revision made.

SPECIFIC COMMENTS:

- The schematization of figures 6, 8, 9, 11, and 14 stand out.

- Table 1 presents a good summary of the experimental criteria analyzed.

- Sometimes there is an abuse of using quotes without clearly explaining the ideas that are to be discussed in the paragraph.

- For example, in item 1.2. mentions many references but does not specifically explain the importance of 'basin inversion tectonics'.

- In L. 91 authors comment that "determining timing of investment has been historically crucial to petroleum geologist". Authors should state directly why it is 'crucial', without leaving it to the imagination of the reader.

- In L. 96 they indicate '... development of mineral resources'. This is very broad. What mineral resources" are they referring to?

- Idem L.97-98 indicates that 'understanding of basin evolution, including basin inversion, is also of great interest for geothermal energy projects'. Authors should state directly why it is 'crucial'.

- Another example is the paragraph between L. 901 and 913; it is very difficult to follow. Only works are cited. For readers who do not know them, they would have to review them to fully understand the ideas that are being proposed in the paragraph. I suggest being more explicit.

- Idem in the paragraph between L. 980 and 986. At least mention some figure that allows following the ideas.

TECHNICAL CORRECTIONS:

Text.

- At the end of item 1.3 you should cite a reference work, L. 128

- Homogenize the style of citations. Sometimes the authors use '&' and sometimes 'and' to cite a work by 2 authors.

- In some parts of the text, there are leftover commas. Example L.230

- Dots are missing, for example L. 680, L. 782, L. 1049.

- Leftover an 'and' L. 791

- L. 1033 says 'Tecnics', it should say 'Tectonics'.

- Find an alternative to the word 'relative' in lines L. 1098-1099.

- Review cut words 'exhumation' L. 1615, or 'modeling' L. 2024, 'coefficients' L. 2050, 'modelling' L. 2183

- L. 2165: Says 'Geoterhrmics', should say 'Geothermics'

Figures:

- The yellow colors of syn-rift and post-rift hardly differ. Try to distinguish them. Figs 8, 9, 11, and similar ones.

- Fig. 2. The sigma symbols are very small, in printed format, and they are barely visible. Increase size.

- Fig. 9. Correct in letter g) is 'Listric' not 'ramp-flat-ramp'

- Fig. 10. The colors of the surfaces of the models are confusing, they should be some color other than the yellow palette. Also, orange colors do not appear in the legend.

- Fig. 14. in b) and c) put 'strong inversion' and 'weak inversion', to be consistent with the text. In k) place the compression direction arrow.

- Fig. 15. The words in the figure are not well-read. Improve resolution.

Citations and references:

- Cross-check citations and references.

- Carefully review each reference.

- Not all citations are in the reference list: Example: Tari et al., 2021; Kiss et al., 2020.

Review.

- 'et al' is sometimes in normal font, others in italics. Check.
- Lamplugh 1991 is cited in the text but in the references, it appears as 1919.
- Koopman 1987 is not in the reference list; I found Koopman et al 1987. Review
- Cadell 1888 is cited in the text but is not in the list.
- McClay is cited in the text but is not listed.
- Jager and Geluk reference is 2007? L. 1532
- Reference Dooley and Hudec is 2020 or 2021?
- Reference Pinto et al., was published in 2010, not in 2016.